Case Study ID

98-0003

ENERGY OFFICE

Case Study Series

Dow Environmental Sciences & Engineering Building

Michigan Tech University

Description

The Dow Environmental Sciences and Engineering Building (ESE) is Michigan Technological University's flagship facility for their "Initiative for the Environment." The facility is designed to strengthen MTU's leadership role as an environmental sciences and engineering teaching and research institution through an environmentally-efficient design and the use of environmentally-sensitive building materials. The 167,000 square foot building is slated for completion during the summer of 1998. When complete, the ESE will house the biology, civil/environmental and geology departments.

Green Building & Energy Efficient Features

Creation of opportunities for solar gain in offices and major interior gathering spaces: The south lobby is designed as a passive solar space with large south facing glazing. The south lobby also has a terrazzo floor to act as a heat sink. The south side of the building of the building has a solar greenhouse for biology research.

Natural lighting and ventilation: All of the offices are located on the perimeter and include operable windows

Use of thermal mass to increase comfort and reduce heat demand : The exterior of the building is highly insulated and includes mass in its walls to minimize heat loss and to dampen the thermal swings that occur during the day

Lighting: The building is designed with all fluorescent lighting, mainly energy efficient T-8s. Dimming is provided through controllable electronic ballasts.

Heat recovery system: A runaround heat recovery system will be utilized to capture heat from the lab exhaust fans.

Mechanical system: The building is designed to take advantage of free cooling by using outdoor air to cool the building. This allowed the designers to eliminate mechanical cooling from the building, with the exception of certain laboratory space.

Motors: Variable frequency drives are utilized on most motors for fans and pumps.

Use of numerous green' building products: The source and production techniques of building materials was researched to ensure that the materials are non-toxic, easy to recycle and not a threat to natural resource depletion.

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